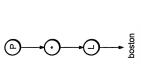
(purchase*)>	(seller, buyer) $ angle$	ID ID location CDATA name CDATA >	(item*)	ID ID location CDATA name CDATA >	(item*)	name CDATA manufacturer CDATA $ angle$
purchases	purchase	seller	seller	buyer	item	item
(! ELEMENT purchases	(! ELEMENT purchase	(! ATTRIST	(! ELEMENT seller	(! ATTRIST	(! ELEMENT	(! ATTRIST

(Prior Art) FIG. 1

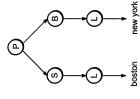
_

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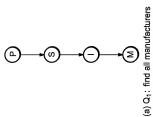


(c) Q₃: find orders with a Boston seller or buyer

> (Prior Art) FIG. 2



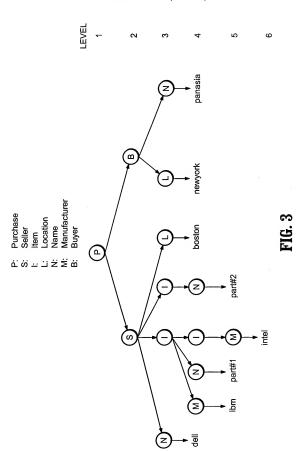
(b) Q₂: find orders with Boston sellers and NY buyers



(d) Q₄: find orders that contain Intel products (items or subitems)



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 (v_6, PSL) , (B, P), (L, PB), (v_7, PBL) , (v_8, PBN) $(v_2, PSIM), (N, PSI), (v_3, PSIN), (I, PSI), (M, PSII),$ $\overline{(P,\epsilon)}$, $\overline{(S,P)}$, (N,PS), (v_1,PSN) , (I,PS), (M,PSI), $(v_4, PSIIM)$, (I, PS), (N, PSI), $(v_5, PSIN)$, $(\underline{L}, \underline{PS})$, $\mathcal{D} =$

FIG. 4

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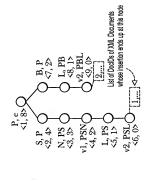
(b) A tree structure for Doc₁ and Doc₂

(a) XML docs and queries in structure-encoded sequences

 $(P, \epsilon) (B, P) (L, PB) (v_2, PBL)$

o o

 $(P, \epsilon)(L, P^*)(v_2, P^*L)$



 $(P, \epsilon)(S, P)(N, PS)(v_1, PSN)(L, PS)(v_2, PSL)$

 Doc_1 Doc_2

 $(P, \epsilon)(B, P)(L, PB)(v_2, PBL)$

FIG. 5

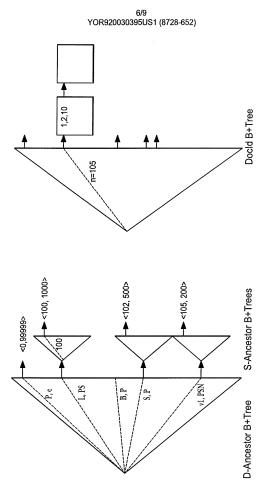
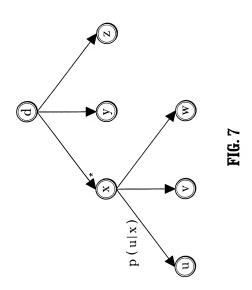


FIG. 6

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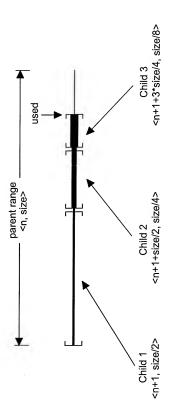
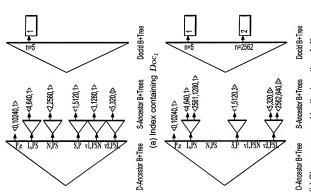


FIG. 8

FIG. 9



(b) Changes caused by the insertion of $\ Doc_2$